



## SEQUENCE LISTING

&lt;110&gt; Curtis, Rory A.J.

<120> 52906, 33408, AND 12189, NOVEL POTASSIUM  
CHANNEL FAMILY MEMBERS AND USES THEREOF

&lt;130&gt; 10448-061001

&lt;150&gt; US 60/209,845

&lt;151&gt; 2000-06-06

&lt;160&gt; 13

&lt;170&gt; FastSEQ for Windows Version 4.0

&lt;210&gt; 1

&lt;211&gt; 3525

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (638) ... (3178)

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Met Pro Ile Val Leu Val

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RECEIVED

JAN 30 2003

TECH CENTER 1600/2900

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Tyr	Leu	Ile	Ala	Arg	Val	Met	Leu	Leu	His	Ser	Lys	Leu	Phe	Thr	Asp		
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ata	gat	cat	gca	aaa	gta	aga	aaa	cat	caa	cga	aaa	ttc	ctg	caa	gct	2815	
Ile	Asp	His	Ala	Lys	Val	Arg	Lys	His	Gln	Arg	Lys	Phe	Leu	Gln	Ala		
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760	765	770	
att gtt acc ctg gaa aca aaa cta gag act ttg att ggt agc atc cac			3007
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775	780	785	790
gcc ctc cct ggg ctc ata agc cag acc atc agg cag cag cag aga gat			3055
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Phe Ile Glu Ala Gln Met Glu Ser Tyr Asp Lys His Val Thr Tyr Asn			
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825	830	835	
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Ala Pro Pro Thr Ser Ser Glu Ser Ser			
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Pro Leu Pro Thr Ile Thr His Cys Ala Gly Cys Thr Thr Ala Trp Ser			
35	40	45	
Pro Cys Ser Phe Asn Ser Pro Asp Met Glu Thr Pro Leu Gln Phe Gln			
50	55	60	
Arg Gly Phe Phe Pro Glu Gln Pro Pro Pro Pro Pro Arg Ser Ser His			
65	70	75	80
Leu His Cys Gln Gln Gln Gln Gln Ser Gln Asp Lys Pro Cys Pro Pro			
85	90	95	
Phe Ala Pro Leu Pro His Pro His His His Pro His Leu Ala His Gln			
100	105	110	
Gln Pro Ala Ser Gly Gly Ser Ser Pro Cys Leu Arg Cys Asn Ser Cys			
115	120	125	
Ala Ser Ser Gly Ala Pro Ala Ala Gly Ala Gly Asp Asn Leu Ser Leu			
130	135	140	

Leu Leu Arg Thr Ser Ser Pro Gly Gly Ala Phe Arg Thr Arg Thr Ser  
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 Ser Pro Leu Ser Gly Ser Ser Cys Cys Cys Cys Cys Cys Ser Ser Arg  
 165 170 175  
 Arg Gly Ser Gln Leu Asn Val Ser Glu Leu Thr Pro Ser Ser His Ala  
 180 185 190  
 Ser Ala Leu Arg Gln Gln Tyr Ala Gln Gln Ser Ala Gln Gln Ser Ala  
 195 200 205  
 Ser Ala Ser Gln Tyr His Gln Cys His Ser Leu Gln Pro Ala Ala Ser  
 210 215 220  
 Pro Thr Gly Ser Leu Gly Ser Leu Gly Ser Gly Pro Pro Leu Ser His  
 225 230 235 240  
 His His His His Pro His Pro Ala His His Gln His His Gln Pro Gln  
 245 250 255  
 Ala Arg Arg Glu Ser Asn Pro Phe Thr Glu Ile Ala Met Ser Ser Cys  
 260 265 270  
 Arg Tyr Asn Gly Gly Val Met Arg Pro Leu Ser Asn Leu Ser Ala Ser  
 275 280 285  
 Arg Arg Asn Leu His Glu Met Asp Ser Glu Ala Gln Pro Leu Gln Pro  
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 Pro Ala Ser Val Gly Gly Gly Gly Gly Ala Ser Ser Pro Ser Ala Ala  
 305 310 315 320  
 Ala Ala Ala Ala Ala Val Ser Ser Ser Ala Pro Glu Ile Val Val  
 325 330 335  
 Ser Lys Pro Glu His Asn Asn Ser Asn Asn Leu Ala Leu Tyr Gly Thr  
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 355 360 365  
 His Gly Ser Ser Ser Gly Thr Lys Ser Ser Lys Lys Lys Asn Gln Asn  
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 385 390 395 400  
 Arg Leu Ser Asp Tyr Ala Leu Ile Phe Gly Met Phe Gly Ile Val Val  
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 Met Val Ile Glu Thr Glu Leu Ser Trp Gly Ala Tyr Asp Lys Ala Ser  
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 435 440 445  
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 Met Val Asp Asn Gly Ala Asp Asp Trp Arg Ile Ala Met Thr Tyr Glu  
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 485 490 495  
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 Pro Met Phe Leu Arg Leu Tyr Leu Ile Ala Arg Val Met Leu Leu His  
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 Lys Ile Asn Phe Asn Thr Arg Phe Val Met Lys Thr Leu Met Thr Ile  
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 Ala Ala Trp Thr Val Arg Ala Cys Glu Arg Tyr His Asp Gln Gln Asp

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Leu Ser Ile Gly Tyr Gly Asp Met Val Pro Asn Thr Tyr Cys Gly Lys		
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Gly Val Cys Leu Leu Thr Gly Ile Met Gly Ala Gly Cys Thr Ala Leu		
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Val Val Ala Val Val Ala Arg Lys Leu Glu Leu Thr Lys Ala Glu Lys		
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His Val His Asn Phe Met Met Asp Thr Gln Leu Thr Lys Arg Val Lys		
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Thr Lys Leu Val Lys Lys Ile Asp His Ala Lys Val Arg Lys His Gln		
705	710	715
Arg Lys Phe Leu Gln Ala Ile His Gln Leu Arg Ser Val Lys Met Glu		
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Gln Arg Lys Leu Asn Asp Gln Ala Asn Thr Leu Val Asp Leu Ala Lys		
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Thr Gln Asn Ile Met Tyr Asp Met Ile Ser Asp Leu Asn Glu Arg Ser		
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Glu Asp Phe Glu Lys Arg Ile Val Thr Leu Glu Thr Lys Leu Glu Thr		
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Lys His Val Thr Tyr Asn Ala Glu Arg Ser Arg Ser Ser Arg Arg		
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&lt;210&gt; 3

&lt;211&gt; 2544

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 3

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tcttctcttc cacccttttc tcctcttctt ccaccttctt tgccctgcac cccccctccc 240
ccgcccggga tcctggccgc tgctctccag acccagg atg ccg ggg ggc aag aga 295
                                Met Pro Gly Gly Lys Arg
                                1 5

```

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ggg ctg gtg gca ccg cag aac aca ttt ttg gag aac atc gtc agg cgc 343
Gly Leu Val Ala Pro Gln Asn Thr Phe Leu Glu Asn Ile Val Arg Arg
          10          15          20

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tcc agt gaa tca agt ttc tta ctg gga aat gcc cag att gtg gat tgg 391
Ser Ser Glu Ser Ser Phe Leu Leu Gly Asn Ala Gln Ile Val Asp Trp
          25          30          35

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```

cct gta gtt tat agt aat gac ggt ttt tgt aaa ctc tct gga tat cat 439
Pro Val Val Tyr Ser Asn Asp Gly Phe Cys Lys Leu Ser Gly Tyr His
          40          45          50

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cga gct gac gtc atg cag aaa agc agc act tgc agt ttt atg tat ggg 487
Arg Ala Asp Val Met Gln Lys Ser Ser Thr Cys Ser Phe Met Tyr Gly

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55	60	65	70	
gaa ttg act gac aag aag acc att gag aaa gtc agg caa act ttt gac				535
Glu Leu Thr Asp Lys Lys Thr Ile Glu Lys Val Arg Gln Thr Phe Asp	75	80	85	
aac tac gaa tca aac tgc ttt gaa gtt ctt ctg tac aag aaa aac aga				583
Asn Tyr Glu Ser Asn Cys Phe Glu Val Leu Leu Tyr Lys Lys Asn Arg	90	95	100	
acc cct gtt tgg ttt tat atg caa att gca cca ata aga aat gaa cat				631
Thr Pro Val Trp Phe Tyr Met Gln Ile Ala Pro Ile Arg Asn Glu His	105	110	115	
gaa aag gtg gtc ttg ttc ctg tgt act ttc aag gat att acg ttg ttc				679
Glu Lys Val Val Leu Phe Leu Cys Thr Phe Lys Asp Ile Thr Leu Phe	120	125	130	
aaa cag cca ata gag gat gat tca aca aaa ggt tgg acg aaa ttt gcc				727
Lys Gln Pro Ile Glu Asp Asp Ser Thr Lys Gly Trp Thr Lys Phe Ala	135	140	145	150
cga ttg aca cgg gct ttg aca aat agc cga agt gtt ttg cag cag ctc				775
Arg Leu Thr Arg Ala Leu Thr Asn Ser Arg Ser Val Leu Gln Gln Leu	155	160	165	
acg cca atg aat aaa aca gag gtg gtc cat aaa cat tca aga cta gct				823
Thr Pro Met Asn Lys Thr Glu Val Val His Lys His Ser Arg Leu Ala	170	175	180	
gaa gtt ctt cag ctg gga tca gat atc ctt cct cag tat aaa caa gaa				871
Glu Val Leu Gln Leu Gly Ser Asp Ile Leu Pro Gln Tyr Lys Gln Glu	185	190	195	
gcg cca aag acg cca cca cac att att tta cat tat tgt gct ttt aaa				919
Ala Pro Lys Thr Pro Pro His Ile Ile Leu His Tyr Cys Ala Phe Lys	200	205	210	
act act tgg gat tgg gtg att tta att ctt acc ttc tac acc gcc att				967
Thr Thr Trp Asp Trp Val Ile Leu Ile Leu Thr Phe Tyr Thr Ala Ile	215	220	225	230
atg gtt cct tat aat gtt tcc ttc aaa aca aag cag aac aac ata gcc				1015
Met Val Pro Tyr Asn Val Ser Phe Lys Thr Lys Gln Asn Asn Ile Ala	235	240	245	
tgg ctg gta ctg gat agt gtg gtg gac gtt att ttt ctg gtt gac atc				1063
Trp Leu Val Leu Asp Ser Val Val Asp Val Ile Phe Leu Val Asp Ile	250	255	260	
gtt tta aat ttt cac acg act ttc gtg ggg ccc ggt gga gag gtc att				1111
Val Leu Asn Phe His Thr Thr Phe Val Gly Pro Gly Gly Glu Val Ile	265	270	275	
tct gac cct aag ctc ata agg atg aac tat ctg aaa act tgg ttt gtg				1159
Ser Asp Pro Lys Leu Ile Arg Met Asn Tyr Leu Lys Thr Trp Phe Val	280	285	290	

atc gat ctg ctg tct tgt tta cct tat gac atc atc aat gcc ttt gaa Ile Asp Leu Leu Ser Cys Leu Pro Tyr Asp Ile Ile Asn Ala Phe Glu 295 300 305 310	1207
aat gtg gat gag gga atc agc agt ctc ttc agt tct tta aaa gtg gtg Asn Val Asp Glu Gly Ile Ser Ser Leu Phe Ser Ser Leu Lys Val Val 315 320 325	1255
cgt ctc tta cga ctg ggc cgt gtg gct agg aaa ctg gac cat tac cta Arg Leu Leu Arg Leu Gly Arg Val Ala Arg Lys Leu Asp His Tyr Leu 330 335 340	1303
gaa tat gga gca gca gtc ctc gtg ctc ctg gtg tgt gtg ttt gga ctg Glu Tyr Gly Ala Ala Val Leu Val Leu Leu Val Cys Val Phe Gly Leu 345 350 355	1351
gtg gcc cac tgg ctg gcc tgc ata tgg tat agc atc gga gac tac gag Val Ala His Trp Leu Ala Cys Ile Trp Tyr Ser Ile Gly Asp Tyr Glu 360 365 370	1399
gtc att gat gaa gtc act aac acc atc caa ata gac agt tgg ctc tac Val Ile Asp Glu Val Thr Asn Thr Ile Gln Ile Asp Ser Trp Leu Tyr 375 380 385 390	1447
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ggg ata tgg gaa gga gga ccc agc aag gat tca ttg tac gtg tcc tct Gly Ile Trp Glu Gly Gly Pro Ser Lys Asp Ser Leu Tyr Val Ser Ser 410 415 420	1543
ctc tac ttt acc atg aca agc ctt aca acc ata gga ttt gga aac ata Leu Tyr Phe Thr Met Thr Ser Leu Thr Thr Ile Gly Phe Gly Asn Ile 425 430 435	1591
gct cct acc aca gat gtg gag aag atg ttt tgc gtg gct atg atg atg Ala Pro Thr Thr Asp Val Glu Lys Met Phe Ser Val Ala Met Met Met 440 445 450	1639
gtt ggc tct ctt ctt tat gca act att ttt gga aat gtt aca aca att Val Gly Ser Leu Leu Tyr Ala Thr Ile Phe Gly Asn Val Thr Thr Ile 455 460 465 470	1687
ttc cag caa atg tat gcc aac acc aac cga tac cat gag atg ctg aat Phe Gln Gln Met Tyr Ala Asn Thr Asn Arg Tyr His Glu Met Leu Asn 475 480 485	1735
aat gta cgg gac ttc cta aaa ctc tat cag gtc cca aaa ggc ctt agt Asn Val Arg Asp Phe Leu Lys Leu Tyr Gln Val Pro Lys Gly Leu Ser 490 495 500	1783
gag cga gtc atg gat tat att gtc tca aca tgg tcc atg tca aaa ggc Glu Arg Val Met Asp Tyr Ile Val Ser Thr Trp Ser Met Ser Lys Gly 505 510 515	1831

att gat aca gaa aag gtc ctc tcc atc tgt ccc aag gac atg aga gct Ile Asp Thr Glu Lys Val Leu Ser Ile Cys Pro Lys Asp Met Arg Ala 520 525 530	1879
gat atc tgt gtt cat cta aac cgg aag gtt ttt aat gaa cat cct gct Asp Ile Cys Val His Leu Asn Arg Lys Val Phe Asn Glu His Pro Ala 535 540 545 550	1927
ttt cga ttg gcc agc gat ggg tgt ctg cgc gcc ttg gcg gta gag ttc Phe Arg Leu Ala Ser Asp Gly Cys Leu Arg Ala Leu Ala Val Glu Phe 555 560 565	1975
caa acc att cac tgt gct ccc ggg gac ctc att tac cat gct gga gaa Gln Thr Ile His Cys Ala Pro Gly Asp Leu Ile Tyr His Ala Gly Glu 570 575 580	2023
agt gtg gat gcc ctc tgc ttt gtg gtg tca gga tcc ttg gaa gtc atc Ser Val Asp Ala Leu Cys Phe Val Val Ser Gly Ser Leu Glu Val Ile 585 590 595	2071
cag gat gat gag gtg gtg gct att tta ggg aag ggt gat gta ttt gga Gln Asp Asp Glu Val Val Ala Ile Leu Gly Lys Gly Asp Val Phe Gly 600 605 610	2119
gac atc ttc tgg aag gaa acc acc ctt gcc cat gca tgt gcg aac gtc Asp Ile Phe Trp Lys Glu Thr Thr Leu Ala His Ala Cys Ala Asn Val 615 620 625 630	2167
cgg gca ctg acg tac tgt gac cta cac atc atc aag cgg gaa gcc ttg Arg Ala Leu Thr Tyr Cys Asp Leu His Ile Ile Lys Arg Glu Ala Leu 635 640 645	2215
ctc aaa gtc ctg gac ttt tat aca gct ttt gca aac tcc ttc tca agg Leu Lys Val Leu Asp Phe Tyr Thr Ala Phe Ala Asn Ser Phe Ser Arg 650 655 660	2263
aat ctc act ctt act tgc aat ctg agg aaa cgg atc atc ttt cgt aag Asn Leu Thr Leu Thr Cys Asn Leu Arg Lys Arg Ile Ile Phe Arg Lys 665 670 675	2311
atc agt gat gtg aag aaa gag gag gag gag cgc ctc cgg cag aag aat Ile Ser Asp Val Lys Lys Glu Glu Glu Arg Leu Arg Gln Lys Asn 680 685 690	2359
gag gtg acc ctc agc att ccc gtg gac cac cca gtc aga aag ctc ttc Glu Val Thr Leu Ser Ile Pro Val Asp His Pro Val Arg Lys Leu Phe 695 700 705 710	2407
cag aag ttc aag cag cag aag gag ctg cgg aat cag ggc tca aca cag Gln Lys Phe Lys Gln Gln Lys Glu Leu Arg Asn Gln Gly Ser Thr Gln 715 720 725	2455
ggg gac cct gag agg aac caa ctc cag gta gag agc cgc tcc tta cag Gly Asp Pro Glu Arg Asn Gln Leu Gln Val Glu Ser Arg Ser Leu Gln 730 735 740	2503
aat gga acc tcc atc acc gga acc agc gtg gtg act gtg tca cag att	2551

Asn Gly Thr Ser Ile Thr Gly Thr Ser Val Val Thr Val Ser Gln Ile	
745 750 755	
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Thr Pro Ile Gln Thr Ser Leu Ala Tyr Val Lys Thr Ser Glu Ser Leu	
760 765 770	
aag cag aac aac cgt gat gcc atg gaa ctc aag ccc aac ggc ggt gct	2647
Lys Gln Asn Asn Arg Asp Ala Met Glu Leu Lys Pro Asn Gly Gly Ala	
775 780 785 790	
gac caa aaa tgt ctc aaa gtc aac agc cca ata aga atg aag aat gga	2695
Asp Gln Lys Cys Leu Lys Val Asn Ser Pro Ile Arg Met Lys Asn Gly	
795 800 805	
aat gga aaa ggg tgg ctg cga ctc aag aat aat atg gga gcc cat gag	2743
Asn Gly Lys Gly Trp Leu Arg Leu Lys Asn Asn Met Gly Ala His Glu	
810 815 820	
gag aaa aag gaa gac tgg aat aat gtc act aaa gct gag tca atg ggg	2791
Glu Lys Lys Glu Asp Trp Asn Asn Val Thr Lys Ala Glu Ser Met Gly	
825 830 835	
cta ttg tct gag gac ccc aag agc agt gat tca gag aac agt gtg acc	2839
Leu Leu Ser Glu Asp Pro Lys Ser Ser Asp Ser Glu Asn Ser Val Thr	
840 845 850	
aaa aac cca cta agg aaa aca gat tct tgt gac agt gga att aca aaa	2887
Lys Asn Pro Leu Arg Lys Thr Asp Ser Cys Asp Ser Gly Ile Thr Lys	
855 860 865 870	
agt gac ctt cgt ttg gat aag gct ggg gag gcc cga agt ccg cta gag	2935
Ser Asp Leu Arg Leu Asp Lys Ala Gly Glu Ala Arg Ser Pro Leu Glu	
875 880 885	
cac agt ccc atc cag gct gat gcc aag cac ccc ttt tat ccc atc ccc	2983
His Ser Pro Ile Gln Ala Asp Ala Lys His Pro Phe Tyr Pro Ile Pro	
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gag cag gcc tta cag acc aca ctg cag gaa gtc aaa cac gaa ctc aaa	3031
Glu Gln Ala Leu Gln Thr Thr Leu Gln Glu Val Lys His Glu Leu Lys	
905 910 915	
gag gac atc cag ctg ctc agc tgc aga atg act gcc cta gaa aag cag	3079
Glu Asp Ile Gln Leu Leu Ser Cys Arg Met Thr Ala Leu Glu Lys Gln	
920 925 930	
gtg gca gaa att tta aaa ata ctg tgc gaa aaa agc gta ccc cag gcc	3127
Val Ala Glu Ile Leu Lys Ile Leu Ser Glu Lys Ser Val Pro Gln Ala	
935 940 945 950	
tca tct ccc aaa tcc caa atg cca ctc caa gta ccc ccc cag ata cca	3175
Ser Ser Pro Lys Ser Gln Met Pro Leu Gln Val Pro Pro Gln Ile Pro	
955 960 965	
tgt cag gat att ttt agt gtc tca agg cct gaa tca cct gaa tct gac	3223
Cys Gln Asp Ile Phe Ser Val Ser Arg Pro Glu Ser Pro Glu Ser Asp	

970

975

980

aaa gat gaa atc cac ttt taatatatat acatatatat ttgttaatat  
Lys Asp Glu Ile His Phe

3271

985

attaaaacag tatatacata tgtgtgtata tacagtatat acatatatat attttcactt 3331  
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&lt;210&gt; 5

&lt;211&gt; 988

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 5

Met	Pro	Gly	Gly	Lys	Arg	Gly	Leu	Val	Ala	Pro	Gln	Asn	Thr	Phe	Leu
1				5					10					15	
Glu	Asn	Ile	Val	Arg	Arg	Ser	Ser	Glu	Ser	Ser	Phe	Leu	Leu	Gly	Asn
			20					25					30		
Ala	Gln	Ile	Val	Asp	Trp	Pro	Val	Val	Tyr	Ser	Asn	Asp	Gly	Phe	Cys
		35					40					45			
Lys	Leu	Ser	Gly	Tyr	His	Arg	Ala	Asp	Val	Met	Gln	Lys	Ser	Ser	Thr
	50					55					60				
Cys	Ser	Phe	Met	Tyr	Gly	Glu	Leu	Thr	Asp	Lys	Lys	Thr	Ile	Glu	Lys
65					70					75					80
Val	Arg	Gln	Thr	Phe	Asp	Asn	Tyr	Glu	Ser	Asn	Cys	Phe	Glu	Val	Leu
				85					90					95	
Leu	Tyr	Lys	Lys	Asn	Arg	Thr	Pro	Val	Trp	Phe	Tyr	Met	Gln	Ile	Ala
			100					105					110		
Pro	Ile	Arg	Asn	Glu	His	Glu	Lys	Val	Val	Leu	Phe	Leu	Cys	Thr	Phe
		115					120					125			
Lys	Asp	Ile	Thr	Leu	Phe	Lys	Gln	Pro	Ile	Glu	Asp	Asp	Ser	Thr	Lys
	130					135					140				
Gly	Trp	Thr	Lys	Phe	Ala	Arg	Leu	Thr	Arg	Ala	Leu	Thr	Asn	Ser	Arg
145					150					155					160
Ser	Val	Leu	Gln	Gln	Leu	Thr	Pro	Met	Asn	Lys	Thr	Glu	Val	Val	His
				165					170					175	
Lys	His	Ser	Arg	Leu	Ala	Glu	Val	Leu	Gln	Leu	Gly	Ser	Asp	Ile	Leu
		180						185					190		
Pro	Gln	Tyr	Lys	Gln	Glu	Ala	Pro	Lys	Thr	Pro	Pro	His	Ile	Ile	Leu
		195					200					205			
His	Tyr	Cys	Ala	Phe	Lys	Thr	Thr	Trp	Asp	Trp	Val	Ile	Leu	Ile	Leu
	210					215					220				
Thr	Phe	Tyr	Thr	Ala	Ile	Met	Val	Pro	Tyr	Asn	Val	Ser	Phe	Lys	Thr
225					230					235					240
Lys	Gln	Asn	Asn	Ile	Ala	Trp	Leu	Val	Leu	Asp	Ser	Val	Val	Asp	Val
				245					250					255	
Ile	Phe	Leu	Val	Asp	Ile	Val	Leu	Asn	Phe	His	Thr	Thr	Phe	Val	Gly
		260					265						270		
Pro	Gly	Gly	Glu	Val	Ile	Ser	Asp	Pro	Lys	Leu	Ile	Arg	Met	Asn	Tyr
		275					280					285			
Leu	Lys	Thr	Trp	Phe	Val	Ile	Asp	Leu	Leu	Ser	Cys	Leu	Pro	Tyr	Asp
	290					295					300				
Ile	Ile	Asn	Ala	Phe	Glu	Asn	Val	Asp	Glu	Gly	Ile	Ser	Ser	Leu	Phe

305		310		315		320
Ser Ser Leu Lys Val Val Arg Leu Leu Arg Leu Gly Arg Val Ala Arg						
	325		330		335	
Lys Leu Asp His Tyr Leu Glu Tyr Gly Ala Ala Val Leu Val Leu Leu						
	340		345		350	
Val Cys Val Phe Gly Leu Val Ala His Trp Leu Ala Cys Ile Trp Tyr						
	355		360		365	
Ser Ile Gly Asp Tyr Glu Val Ile Asp Glu Val Thr Asn Thr Ile Gln						
	370		375		380	
Ile Asp Ser Trp Leu Tyr Gln Leu Ala Leu Ser Ile Gly Thr Pro Tyr						
	385		390		395	
Arg Tyr Asn Thr Ser Ala Gly Ile Trp Glu Gly Gly Pro Ser Lys Asp						
	405		410		415	
Ser Leu Tyr Val Ser Ser Leu Tyr Phe Thr Met Thr Ser Leu Thr Thr						
	420		425		430	
Ile Gly Phe Gly Asn Ile Ala Pro Thr Thr Asp Val Glu Lys Met Phe						
	435		440		445	
Ser Val Ala Met Met Met Val Gly Ser Leu Leu Tyr Ala Thr Ile Phe						
	450		455		460	
Gly Asn Val Thr Thr Ile Phe Gln Gln Met Tyr Ala Asn Thr Asn Arg						
	465		470		475	
Tyr His Glu Met Leu Asn Asn Val Arg Asp Phe Leu Lys Leu Tyr Gln						
	485		490		495	
Val Pro Lys Gly Leu Ser Glu Arg Val Met Asp Tyr Ile Val Ser Thr						
	500		505		510	
Trp Ser Met Ser Lys Gly Ile Asp Thr Glu Lys Val Leu Ser Ile Cys						
	515		520		525	
Pro Lys Asp Met Arg Ala Asp Ile Cys Val His Leu Asn Arg Lys Val						
	530		535		540	
Phe Asn Glu His Pro Ala Phe Arg Leu Ala Ser Asp Gly Cys Leu Arg						
	545		550		555	
Ala Leu Ala Val Glu Phe Gln Thr Ile His Cys Ala Pro Gly Asp Leu						
	565		570		575	
Ile Tyr His Ala Gly Glu Ser Val Asp Ala Leu Cys Phe Val Val Ser						
	580		585		590	
Gly Ser Leu Glu Val Ile Gln Asp Asp Glu Val Val Ala Ile Leu Gly						
	595		600		605	
Lys Gly Asp Val Phe Gly Asp Ile Phe Trp Lys Glu Thr Thr Leu Ala						
	610		615		620	
His Ala Cys Ala Asn Val Arg Ala Leu Thr Tyr Cys Asp Leu His Ile						
	625		630		635	
Ile Lys Arg Glu Ala Leu Leu Lys Val Leu Asp Phe Tyr Thr Ala Phe						
	645		650		655	
Ala Asn Ser Phe Ser Arg Asn Leu Thr Leu Thr Cys Asn Leu Arg Lys						
	660		665		670	
Arg Ile Ile Phe Arg Lys Ile Ser Asp Val Lys Lys Glu Glu Glu Glu						
	675		680		685	
Arg Leu Arg Gln Lys Asn Glu Val Thr Leu Ser Ile Pro Val Asp His						
	690		695		700	
Pro Val Arg Lys Leu Phe Gln Lys Phe Lys Gln Gln Lys Glu Leu Arg						
	705		710		715	
Asn Gln Gly Ser Thr Gln Gly Asp Pro Glu Arg Asn Gln Leu Gln Val						
	725		730		735	
Glu Ser Arg Ser Leu Gln Asn Gly Thr Ser Ile Thr Gly Thr Ser Val						
	740		745		750	
Val Thr Val Ser Gln Ile Thr Pro Ile Gln Thr Ser Leu Ala Tyr Val						
	755		760		765	

Lys Thr Ser Glu Ser Leu Lys Gln Asn Asn Arg Asp Ala Met Glu Leu  
 770 775 780  
 Lys Pro Asn Gly Gly Ala Asp Gln Lys Cys Leu Lys Val Asn Ser Pro  
 785 790 795 800  
 Ile Arg Met Lys Asn Gly Asn Gly Lys Gly Trp Leu Arg Leu Lys Asn  
 805 810 815  
 Asn Met Gly Ala His Glu Glu Lys Lys Glu Asp Trp Asn Asn Val Thr  
 820 825 830  
 Lys Ala Glu Ser Met Gly Leu Leu Ser Glu Asp Pro Lys Ser Ser Asp  
 835 840 845  
 Ser Glu Asn Ser Val Thr Lys Asn Pro Leu Arg Lys Thr Asp Ser Cys  
 850 855 860  
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 Pro Phe Tyr Pro Ile Pro Glu Gln Ala Leu Gln Thr Thr Leu Gln Glu  
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 Thr Ala Leu Glu Lys Gln Val Ala Glu Ile Leu Lys Ile Leu Ser Glu  
 930 935 940  
 Lys Ser Val Pro Gln Ala Ser Ser Pro Lys Ser Gln Met Pro Leu Gln  
 945 950 955 960  
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 965 970 975  
 Glu Ser Pro Glu Ser Asp Lys Asp Glu Ile His Phe  
 980 985

&lt;210&gt; 6

&lt;211&gt; 2967

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 6

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tcaaggaatc tcaactcttac ttgcaatctg aggaaacgga tcatctttcg taagatcagt 2040
gatgtgaaga aagaggagga ggagcgcctc cggcagaaga atgaggtgac cctcagcatt 2100
cccgtggacc acccagtcag aaagctcttc cagaagttca agcagcagaa ggagctgcgg 2160
aatcagggtc caacacaggg tgacctgag aggaaccaac tccaggtaga gagccgctcc 2220
ttacagaatg gaacctccat caccggaacc agcgtggtga ctgtgtcaca gattactccc 2280
attcagacgt ctctggccta tgtgaaaacc agtgaatccc ttaagcagaa caaccgtgat 2340
gccatggaac tcaagcccaa cggcgggtgct gacaaaaaat gtctcaaagt caacagccca 2400
ataagaatga agaattgaaa tggaaaaggg tggctgcgac tcaagaataa tatgggagcc 2460
catgaggaga aaaaggaaga ctggaataat gtcactaaag ctgagtcaat ggggctattg 2520
tctgaggacc ccaagagcag tgattcagag aacagtgtga ccaaaaaccc actaaggaaa 2580
acagattctt gtgacagtgg aattacaaaa agtgaccttc gtttggataa ggctggggag 2640
gcccgaagtc cgctagagca cagtcccatc caggctgatg ccaagcacc cttttatccc 2700
atccccgagc aggccttaca gaccacactg caggaagtca aacacgaact caaagaggac 2760
atccagctgc tcagctgcag aatgactgcc ctagaaaagc aggtggcaga aattttaaaa 2820
atactgtcgg aaaaaagcgt accccaggcc tcatctccca aatcccaaat gccactccaa 2880
gtaccccccc agataccatg tcaggatatt tttagtgtct caaggcctga atcacctgaa 2940
tctgacaaag atgaaatcca cttttaaa 2967

```

<210> 7

<211> 1341

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1) ... (1338)

<400> 7

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tgc tgc gag cgg ctg gtg ctc aac gtg gcc ggg ctg cgc ttc gag acg 48
Cys Cys Glu Arg Leu Val Leu Asn Val Ala Gly Leu Arg Phe Glu Thr
1 5 10 15

```

```

cgg gcg cgc acg ctg ggc cgc ttc ccg gac act ctg cta ggg gac cca 96
Arg Ala Arg Thr Leu Gly Arg Phe Pro Asp Thr Leu Leu Gly Asp Pro
20 25 30

```

```

gcg cgc cgc ggc cgc ttc tac gac gac gcg cgc cgc gag tat ttc ttc 144
Ala Arg Arg Gly Arg Phe Tyr Asp Asp Ala Arg Arg Glu Tyr Phe Phe
35 40 45

```

```

gac cgg cac cgg ccc agc ttc gac gcc gtg ctc tac tac tac cag tcc 192
Asp Arg His Arg Pro Ser Phe Asp Ala Val Leu Tyr Tyr Tyr Gln Ser
50 55 60

```

```

ggg ggg cgg ctg cgg cgg ccg gcg cac gtg ccg ctc gac gtc ttc ctg 240
Gly Gly Arg Leu Arg Arg Pro Ala His Val Pro Leu Asp Val Phe Leu

```



65	70	75	80	
gaa gag gtg gcc ttc tac ggg ctg ggc gcg gcg gcc ctg gca cgc ctg				288
Glu Glu Val Ala Phe Tyr Gly Leu Gly Ala Ala Ala Leu Ala Arg Leu	85	90	95	
cgc gag gac gag ggc tgc ccg gtg ccg ccc gag cgc ccc ctg ccc cgc				336
Arg Glu Asp Glu Gly Cys Pro Val Pro Pro Glu Arg Pro Leu Pro Arg	100	105	110	
cgc gcc ttc gcc cgc cag ctg tgc ctg ctt ttc gag ttt ccc gag agc				384
Arg Ala Phe Ala Arg Gln Leu Cys Leu Leu Phe Glu Phe Pro Glu Ser	115	120	125	
tct cag gcc gcg cgc gtg ctc gcc gta gtc tcc gtg ctg gtc atc ctc				432
Ser Gln Ala Ala Arg Val Leu Ala Val Val Ser Val Leu Val Ile Leu	130	135	140	
gtc tcc atc gtc gtc ttc tgc ctc gag acg ctg cct gac ttc cgc gac				480
Val Ser Ile Val Val Phe Cys Leu Glu Thr Leu Pro Asp Phe Arg Asp	145	150	155	160
gac cgc gac ggc acg ggg ctt gct gct gca gcc gca gcc ggc ccg ttc				528
Asp Arg Asp Gly Thr Gly Leu Ala Ala Ala Ala Ala Gly Pro Phe	165	170	175	
ccc gct ccg ctg aat ggc tcc agc caa atg cct gga aat cca ccc cgc				576
Pro Ala Pro Leu Asn Gly Ser Ser Gln Met Pro Gly Asn Pro Pro Arg	180	185	190	
ctg ccc ttc aat gac ccg ttc ttc gtg gtg gag acg ctg tgt att tgt				624
Leu Pro Phe Asn Asp Pro Phe Phe Val Val Glu Thr Leu Cys Ile Cys	195	200	205	
tgg ttc tcc ttt gag ctg ctg gta cgc ctc ctg gtc tgt cca agc aag				672
Trp Phe Ser Phe Glu Leu Leu Val Arg Leu Leu Val Cys Pro Ser Lys	210	215	220	
gct atc ttc ttc aag aac gtg atg aac ctc atc gat ttt gtg gct atc				720
Ala Ile Phe Phe Lys Asn Val Met Asn Leu Ile Asp Phe Val Ala Ile	225	230	235	240
ctt ccc tac ttt gtg gca ctg ggc acc gag ctg gcc cgg cag cga ggg				768
Leu Pro Tyr Phe Val Ala Leu Gly Thr Glu Leu Ala Arg Gln Arg Gly	245	250	255	
gtg ggc cag cag gcc atg tca ctg gcc atc ctg aga gtc atc cga ttg				816
Val Gly Gln Gln Ala Met Ser Leu Ala Ile Leu Arg Val Ile Arg Leu	260	265	270	
gtg cgt gtc ttc cgc atc ttc aag ctg tcc cgg cac tca aag ggc ctg				864
Val Arg Val Phe Arg Ile Phe Lys Leu Ser Arg His Ser Lys Gly Leu	275	280	285	
caa atc ttg ggc cag acg ctt cgg gcc tcc atg cgt gag ctg ggc ctc				912
Gln Ile Leu Gly Gln Thr Leu Arg Ala Ser Met Arg Glu Leu Gly Leu	290	295	300	

ctc atc ttt ttc ctc ttc atc ggt gtg gtc ctc ttt tcc agc gcc gtc 960  
 Leu Ile Phe Phe Leu Phe Ile Gly Val Val Leu Phe Ser Ser Ala Val  
 305 310 315 320

tac ttt gcc gaa gtt gac cgg gtg gac tcc cat ttc act agc atc cct 1008  
 Tyr Phe Ala Glu Val Asp Arg Val Asp Ser His Phe Thr Ser Ile Pro  
 325 330 335

gag tcc ttc tgg tgg gcg gta gtc acc atg act aca gtt ggc tat gga 1056  
 Glu Ser Phe Trp Trp Ala Val Val Thr Met Thr Thr Val Gly Tyr Gly  
 340 345 350

gac atg gca ccc gtc act gtg ggt ggc aag ata gtg ggc tct ctg tgt 1104  
 Asp Met Ala Pro Val Thr Val Gly Gly Lys Ile Val Gly Ser Leu Cys  
 355 360 365

gcc att gcg ggc gtg ctg act att tcc ctg cca gtg ccc gtc att gtc 1152  
 Ala Ile Ala Gly Val Leu Thr Ile Ser Leu Pro Val Pro Val Ile Val  
 370 375 380

tcc aat ttc agc tac ttt tat cac cgg gag aca gag ggc gaa gag gct 1200  
 Ser Asn Phe Ser Tyr Phe Tyr His Arg Glu Thr Glu Gly Glu Glu Ala  
 385 390 395 400

ggg atg ttc agc cat gtg gac atg cag cct tgt ggc cca ctg gag ggc 1248  
 Gly Met Phe Ser His Val Asp Met Gln Pro Cys Gly Pro Leu Glu Gly  
 405 410 415

aag gcc aat ggg ggg ctg gtg gac ggg gag gta cct gag cta cca cct 1296  
 Lys Ala Asn Gly Gly Leu Val Asp Gly Glu Val Pro Glu Leu Pro Pro  
 420 425 430

cca ctc tgg gca ccc cca ggg aaa cac ctg gtc acc gaa gtg 1338  
 Pro Leu Trp Ala Pro Pro Gly Lys His Leu Val Thr Glu Val  
 435 440 445

tga 1341

<210> 8  
 <211> 446  
 <212> PRT  
 <213> Homo sapiens

<400> 8  
 Cys Cys Glu Arg Leu Val Leu Asn Val Ala Gly Leu Arg Phe Glu Thr  
 1 5 10 15  
 Arg Ala Arg Thr Leu Gly Arg Phe Pro Asp Thr Leu Leu Gly Asp Pro  
 20 25 30  
 Ala Arg Arg Gly Arg Phe Tyr Asp Asp Ala Arg Arg Glu Tyr Phe Phe  
 35 40 45  
 Asp Arg His Arg Pro Ser Phe Asp Ala Val Leu Tyr Tyr Tyr Gln Ser  
 50 55 60  
 Gly Gly Arg Leu Arg Arg Pro Ala His Val Pro Leu Asp Val Phe Leu  
 65 70 75 80  
 Glu Glu Val Ala Phe Tyr Gly Leu Gly Ala Ala Ala Leu Ala Arg Leu  
 85 90 95

```

Arg Glu Asp Glu Gly Cys Pro Val Pro Pro Glu Arg Pro Leu Pro Arg
      100      105      110
Arg Ala Phe Ala Arg Gln Leu Cys Leu Leu Phe Glu Phe Pro Glu Ser
      115      120      125
Ser Gln Ala Ala Arg Val Leu Ala Val Val Ser Val Leu Val Ile Leu
      130      135      140
Val Ser Ile Val Val Phe Cys Leu Glu Thr Leu Pro Asp Phe Arg Asp
      145      150      155      160
Asp Arg Asp Gly Thr Gly Leu Ala Ala Ala Ala Ala Gly Pro Phe
      165      170      175
Pro Ala Pro Leu Asn Gly Ser Ser Gln Met Pro Gly Asn Pro Pro Arg
      180      185      190
Leu Pro Phe Asn Asp Pro Phe Phe Val Val Glu Thr Leu Cys Ile Cys
      195      200      205
Trp Phe Ser Phe Glu Leu Leu Val Arg Leu Leu Val Cys Pro Ser Lys
      210      215      220
Ala Ile Phe Phe Lys Asn Val Met Asn Leu Ile Asp Phe Val Ala Ile
      225      230      235      240
Leu Pro Tyr Phe Val Ala Leu Gly Thr Glu Leu Ala Arg Gln Arg Gly
      245      250      255
Val Gly Gln Gln Ala Met Ser Leu Ala Ile Leu Arg Val Ile Arg Leu
      260      265      270
Val Arg Val Phe Arg Ile Phe Lys Leu Ser Arg His Ser Lys Gly Leu
      275      280      285
Gln Ile Leu Gly Gln Thr Leu Arg Ala Ser Met Arg Glu Leu Gly Leu
      290      295      300
Leu Ile Phe Phe Leu Phe Ile Gly Val Val Leu Phe Ser Ser Ala Val
      305      310      315      320
Tyr Phe Ala Glu Val Asp Arg Val Asp Ser His Phe Thr Ser Ile Pro
      325      330      335
Glu Ser Phe Trp Trp Ala Val Val Thr Met Thr Thr Val Gly Tyr Gly
      340      345      350
Asp Met Ala Pro Val Thr Val Gly Gly Lys Ile Val Gly Ser Leu Cys
      355      360      365
Ala Ile Ala Gly Val Leu Thr Ile Ser Leu Pro Val Pro Val Ile Val
      370      375      380
Ser Asn Phe Ser Tyr Phe Tyr His Arg Glu Thr Glu Gly Glu Glu Ala
      385      390      395      400
Gly Met Phe Ser His Val Asp Met Gln Pro Cys Gly Pro Leu Glu Gly
      405      410      415
Lys Ala Asn Gly Gly Leu Val Asp Gly Glu Val Pro Glu Leu Pro Pro
      420      425      430
Pro Leu Trp Ala Pro Pro Gly Lys His Leu Val Thr Glu Val
      435      440      445

```

<210> 9

<211> 223

<212> PRT

<213> Artificial Sequence

<220>

<223> consensus sequence

<400> 9

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Ile Leu Phe Ile Leu Asp Leu Leu Phe Val Leu Leu Phe Leu Leu Glu
 1           5           10           15
Ile Val Leu Lys Phe Ile Ala Tyr Gly Leu Lys Ser Thr Ser Asn Ile

```

				20				25					30			
Ala	Ala	Lys	Tyr	Leu	Lys	Ser	Ile	Phe	Asn	Ile	Leu	Asp	Leu	Leu	Ala	
		35					40					45				
Ile	Leu	Pro	Leu	Leu	Leu	Leu	Leu	Val	Leu	Phe	Leu	Ser	Gly	Thr	Glu	
	50					55					60					
Gln	Val	Ala	Lys	Lys	Arg	Leu	Arg	Glu	Arg	Phe	Ser	Leu	Glu	Leu	Ser	
65					70					75					80	
Gln	Trp	Tyr	Tyr	Arg	Ile	Leu	Arg	Phe	Leu	Arg	Leu	Leu	Arg	Leu	Leu	
				85					90					95		
Arg	Leu	Leu	Arg	Leu	Leu	Arg	Leu	Leu	Arg	Arg	Leu	Glu	Thr	Leu	Phe	
			100					105					110			
Glu	Phe	Glu	Leu	Gly	Thr	Leu	Ala	Trp	Ser	Leu	Gln	Ser	Leu	Gly	Arg	
		115					120					125				
Ala	Leu	Lys	Ser	Ile	Leu	Arg	Phe	Leu	Leu	Leu	Leu	Leu	Leu	Leu	Leu	
	130					135					140					
Ile	Gly	Phe	Ser	Val	Ile	Gly	Tyr	Leu	Leu	Phe	Lys	Gly	Tyr	Glu	Asp	
145					150					155					160	
Leu	Ser	Glu	Asn	Glu	Val	Asp	Gly	Asn	Ser	Glu	Phe	Ser	Ser	Tyr	Phe	
				165					170					175		
Asp	Ala	Phe	Tyr	Phe	Leu	Phe	Val	Thr	Leu	Thr	Thr	Val	Gly	Phe	Gly	
			180					185					190			
Asp	Leu	Val	Pro	Val	Trp	Leu	Gly	Ile	Ile	Phe	Phe	Val	Leu	Phe	Phe	
		195					200					205				
Ile	Ile	Val	Gly	Leu	Leu	Leu	Leu	Asn	Leu	Leu	Ile	Ala	Val	Ile		
	210					215					220					

```
<210> 10
<211> 120
<212> PRT
<213> Artificial Sequence
```

<220>  
<223> consensus sequence

<400> 10															
Ala	Leu	Glu	Glu	Arg	Ser	Tyr	Pro	Ala	Gly	Glu	Val	Ile	Ile	Arg	Gln
1				5					10					15	
Gly	Asp	Pro	Gly	Asp	Ser	Phe	Tyr	Ile	Val	Leu	Ser	Gly	Glu	Val	Glu
			20					25					30		
Val	Tyr	Lys	Leu	Thr	Glu	Asp	Gly	Ala	Arg	Thr	Pro	Glu	Val	Ser	Gln
		35					40					45			
Lys	Gln	Asp	Thr	Arg	Glu	Gln	Val	Val	Ala	Thr	Leu	Gly	Pro	Gly	Asp
	50					55					60				
Phe	Phe	Gly	Glu	Leu	Ala	Leu	Leu	Thr	Asn	Asp	Gly	Asn	Lys	Asn	Ala
65					70					75					80
Val	Leu	Pro	Ser	Leu	Asp	Gln	Gly	Ala	Pro	Arg	Thr	Ala	Thr	Val	Arg
				85					90					95	
Ala	Leu	Thr	Asp	Ser	Glu	Leu	Leu	Arg	Leu	Asp	Arg	Glu	Asp	Phe	Arg
			100					105					110		
Arg	Leu	Leu	Gln	Lys	Tyr	Pro	Glu								
		115					120								

```
<210> 11
<211> 111
<212> PRT
<213> Artificial Sequence
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&lt;220&gt;

&lt;223&gt; consensus sequence

&lt;400&gt; 11

```

Glu Arg Val Arg Leu Asn Val Gly Gly Lys Arg Phe Glu Thr Ser Lys
 1              5              10              15
Ser Thr Leu Thr Arg Phe Lys Pro Asp Thr Leu Leu Gly Arg Leu Leu
      20              25              30
Lys Thr Asp Ser Asp Val His Glu Ala Arg Leu Arg Leu Cys Asp Phe
      35              40              45
Tyr Asp Asp Glu Thr Gly Glu Tyr Phe Phe Asp Arg Ser Pro Lys His
      50              55              60
Phe Glu Thr Ile Leu Asn Phe Tyr Arg Thr Gly Asp Gly Lys Leu His
      65              70              75              80
Arg Pro Glu Val Cys Leu Asp Ser Phe Leu Glu Glu Leu Glu Phe Tyr
      85              90              95
Gly Leu Asp Glu Leu Ala Ile Glu Ser Cys Cys Glu Asp Glu Tyr
      100              105              110

```

&lt;210&gt; 12

&lt;211&gt; 988

&lt;212&gt; PRT

&lt;213&gt; Rattus norvegicus

&lt;400&gt; 12

```

Met Pro Gly Gly Lys Arg Gly Leu Val Ala Pro Gln Asn Thr Phe Leu
 1              5              10              15
Glu Asn Ile Val Arg Arg Ser Ser Glu Ser Ser Phe Leu Leu Gly Asn
      20              25              30
Ala Gln Ile Val Asp Trp Pro Val Val Tyr Ser Asn Asp Gly Phe Cys
      35              40              45
Lys Leu Ser Gly Tyr His Arg Ala Asp Val Met Gln Lys Ser Ser Thr
      50              55              60
Cys Ser Phe Met Tyr Gly Glu Leu Thr Asp Lys Lys Thr Ile Glu Lys
      65              70              75              80
Val Arg Gln Thr Phe Asp Asn Tyr Glu Ser Asn Cys Phe Glu Val Leu
      85              90              95
Leu Tyr Lys Lys Asn Arg Thr Pro Val Trp Phe Tyr Met Gln Ile Ala
      100              105              110
Pro Ile Arg Asn Glu His Glu Lys Val Val Leu Phe Leu Cys Thr Phe
      115              120              125
Lys Asp Ile Thr Leu Phe Lys Gln Pro Ile Glu Asp Asp Ser Thr Lys
      130              135              140
Gly Trp Thr Lys Phe Ala Arg Leu Thr Arg Ala Leu Thr Asn Ser Arg
      145              150              155              160
Ser Val Leu Gln Gln Leu Thr Pro Met Asn Lys Thr Glu Thr Val His
      165              170              175
Lys His Ser Arg Leu Ala Glu Val Leu Gln Leu Gly Ser Asp Ile Leu
      180              185              190
Pro Gln Tyr Lys Gln Glu Ala Pro Lys Thr Pro Pro His Ile Ile Leu
      195              200              205
His Tyr Cys Ala Phe Lys Thr Thr Trp Asp Trp Val Ile Leu Ile Leu
      210              215              220
Thr Phe Tyr Thr Ala Ile Met Val Pro Tyr Asn Val Ser Phe Lys Thr
      225              230              235              240
Lys Gln Asn Asn Ile Ala Trp Leu Val Leu Asp Ser Val Val Asp Val
      245              250              255

```

Ile	Phe	Leu	Val	Asp	Ile	Val	Leu	Asn	Phe	His	Thr	Thr	Phe	Val	Gly	260	265	270
Pro	Gly	Gly	Glu	Val	Ile	Ser	Asp	Pro	Lys	Leu	Ile	Arg	Met	Asn	Tyr	275	280	285
Leu	Lys	Thr	Trp	Phe	Val	Ile	Asp	Leu	Leu	Ser	Cys	Leu	Pro	Tyr	Asp	290	295	300
Ile	Ile	Asn	Ala	Phe	Glu	Asn	Val	Asp	Glu	Gly	Ile	Ser	Ser	Leu	Phe	305	310	315
Ser	Ser	Leu	Lys	Val	Val	Arg	Leu	Leu	Arg	Leu	Gly	Arg	Val	Ala	Arg	325	330	335
Lys	Leu	Asp	His	Tyr	Leu	Glu	Tyr	Gly	Ala	Ala	Val	Leu	Val	Leu	Leu	340	345	350
Val	Cys	Val	Phe	Gly	Leu	Val	Ala	His	Trp	Leu	Ala	Cys	Ile	Trp	Tyr	355	360	365
Ser	Ile	Gly	Asp	Tyr	Glu	Val	Ile	Asp	Glu	Val	Thr	Asn	Thr	Ile	Gln	370	375	380
Ile	Asp	Ser	Trp	Leu	Tyr	Gln	Leu	Ala	Leu	Ser	Ile	Arg	Thr	Pro	Tyr	385	390	395
Arg	Tyr	Asn	Thr	Ser	Ala	Gly	Ile	Trp	Glu	Gly	Gly	Pro	Ser	Lys	Asp	405	410	415
Ser	Leu	Tyr	Val	Ser	Ser	Leu	Tyr	Phe	Thr	Met	Thr	Ser	Leu	Thr	Thr	420	425	430
Ile	Gly	Phe	Gly	Asn	Ile	Ala	Pro	Thr	Thr	Asp	Val	Glu	Lys	Met	Phe	435	440	445
Ser	Val	Ala	Met	Met	Met	Val	Gly	Ser	Leu	Leu	Tyr	Ala	Thr	Ile	Phe	450	455	460
Gly	Asn	Val	Thr	Thr	Ile	Phe	Gln	Gln	Met	Tyr	Ala	Asn	Thr	Asn	Arg	465	470	475
Tyr	His	Glu	Met	Leu	Asn	Asn	Val	Arg	Asp	Phe	Leu	Lys	Leu	Tyr	Gln	485	490	495
Val	Pro	Lys	Gly	Leu	Ser	Glu	Arg	Val	Met	Asp	Tyr	Ile	Val	Ser	Thr	500	505	510
Trp	Ser	Met	Ser	Lys	Gly	Ile	Asp	Thr	Glu	Lys	Val	Leu	Ser	Ile	Cys	515	520	525
Pro	Lys	Asp	Met	Arg	Ala	Asp	Ile	Cys	Val	His	Leu	Asn	Arg	Lys	Val	530	535	540
Phe	Asn	Glu	His	Pro	Ala	Phe	Arg	Leu	Ala	Ser	Asp	Gly	Cys	Leu	Arg	545	550	555
Ala	Leu	Ala	Val	Glu	Phe	Gln	Thr	Ile	His	Cys	Ala	Pro	Gly	Asp	Leu	565	570	575
Ile	Tyr	His	Ala	Gly	Glu	Ser	Val	Asp	Ala	Leu	Cys	Phe	Val	Val	Ser	580	585	590
Gly	Ser	Leu	Glu	Val	Ile	Gln	Asp	Glu	Glu	Val	Val	Ala	Ile	Leu	Gly	595	600	605
Lys	Gly	Asp	Val	Phe	Gly	Asp	Ile	Phe	Trp	Lys	Glu	Thr	Thr	Leu	Ala	610	615	620
His	Ala	Cys	Ala	Asn	Val	Arg	Ala	Leu	Thr	Tyr	Cys	Asp	Leu	His	Ile	625	630	635
Ile	Lys	Arg	Glu	Ala	Leu	Leu	Lys	Val	Leu	Asp	Phe	Tyr	Thr	Ala	Phe	645	650	655
Ala	Asn	Ser	Phe	Ser	Arg	Asn	Leu	Thr	Leu	Thr	Cys	Asn	Leu	Arg	Lys	660	665	670
Arg	Ile	Ile	Phe	Arg	Lys	Ile	Ser	Asp	Val	Lys	Lys	Glu	Glu	Glu	Glu	675	680	685
Arg	Leu	Arg	Gln	Lys	Asn	Glu	Val	Thr	Leu	Ser	Ile	Pro	Val	Asp	His	690	695	700
Pro	Val	Arg	Lys	Leu	Phe	Gln	Lys	Phe	Lys	Gln	Gln	Lys	Glu	Leu	Arg			

```

705          710          715          720
Asn Gln Gly Ser Ala Gln Ser Asp Pro Glu Arg Ser Gln Leu Gln Val
          725          730          735
Glu Ser Arg Pro Leu Gln Asn Gly Ala Ser Ile Thr Gly Thr Ser Val
          740          745          750
Val Thr Val Ser Gln Ile Thr Pro Ile Gln Thr Ser Leu Ala Tyr Val
          755          760          765
Lys Thr Ser Glu Thr Leu Lys Gln Asn Asn Arg Asp Ala Met Glu Leu
          770          775          780
Lys Pro Asn Gly Gly Ala Glu Pro Lys Cys Leu Lys Val Asn Ser Pro
785          790          795          800
Ile Arg Met Lys Asn Gly Asn Gly Lys Gly Trp Leu Arg Leu Lys Asn
          805          810          815
Asn Met Gly Ala His Glu Glu Lys Lys Glu Glu Trp Asn Asn Val Thr
          820          825          830
Lys Ala Glu Ser Met Gly Leu Leu Ser Glu Asp Pro Lys Gly Ser Asp
          835          840          845
Ser Glu Asn Ser Val Thr Lys Asn Pro Leu Arg Lys Thr Asp Ser Cys
          850          855          860
Asp Ser Gly Ile Thr Lys Ser Asp Leu Arg Leu Asp Lys Ala Gly Glu
865          870          875          880
Ala Arg Ser Pro Leu Glu His Ser Pro Ser Gln Ala Asp Ala Lys His
          885          890          895
Pro Phe Tyr Pro Ile Pro Glu Gln Ala Leu Gln Thr Thr Leu Gln Glu
          900          905          910
Val Lys His Glu Leu Lys Glu Asp Ile Gln Leu Leu Ser Cys Arg Met
          915          920          925
Thr Ala Leu Glu Lys Gln Val Ala Glu Ile Leu Lys Leu Leu Ser Glu
          930          935          940
Lys Ser Val Pro Gln Thr Ser Ser Pro Lys Pro Gln Ile Pro Leu Gln
945          950          955          960
Val Pro Pro Gln Ile Pro Cys Gln Asp Ile Phe Ser Val Ser Arg Pro
          965          970          975
Glu Ser Pro Glu Ser Asp Lys Asp Glu Ile Asn Phe
          980          985

```

&lt;210&gt; 13

&lt;211&gt; 532

&lt;212&gt; PRT

&lt;213&gt; Mus musculus

&lt;400&gt; 13

```

Met Thr Thr Arg Lys Ala Gln Glu Ile His Gly Lys Ala Pro Gly Gly
1          5          10          15
Ser Val Ser Thr Gly Val Gly Thr Ala Glu Gly Ala Pro Ser Pro Ala
          20          25          30
Gly Val Thr Pro Pro Pro Pro Pro Arg Pro Gly Arg Thr Phe His Ala
          35          40          45
Ile Phe Thr Arg Arg His Arg Thr Pro Asp Trp Gly Gly Cys Gly Val
          50          55          60
Gly Ala Thr Arg Pro Phe Thr Gly Arg Pro Gly Cys Ala Arg His Gly
65          70          75          80
Ala Thr Val Pro Ala Ala Leu Arg Cys Cys Glu Arg Leu Val Leu Asn
          85          90          95
Val Ala Gly Leu Arg Phe Glu Thr Arg Ala Arg Thr Leu Gly Arg Phe
          100          105          110
Pro Asp Thr Leu Leu Gly Asp Pro Val Arg Arg Ser Arg Phe Tyr Asp

```

115 120 125  
 Gly Ala Arg Ala Glu Tyr Phe Phe Asp Arg His Arg Pro Ser Phe Asp  
 130 135 140  
 Ala Val Leu Tyr Tyr Tyr Gln Ser Gly Gly Arg Leu Arg Arg Pro Ala  
 145 150 155 160  
 His Val Pro Leu Asp Val Phe Leu Glu Glu Val Ser Phe Tyr Gly Leu  
 165 170 175  
 Gly Arg Arg Leu Ala Arg Leu Arg Glu Asp Glu Gly Cys Ala Val Ala  
 180 185 190  
 Glu Arg Pro Leu Pro Pro Pro Phe Ala Arg Gln Leu Trp Leu Leu Phe  
 195 200 205  
 Glu Phe Pro Glu Ser Ser Gln Ala Ala Arg Val Leu Ala Val Val Ser  
 210 215 220  
 Val Leu Val Ile Leu Val Ser Ile Val Val Phe Cys Leu Glu Thr Leu  
 225 230 235 240  
 Pro Asp Phe Arg Asp Asp Arg Asp Asp Pro Gly Leu Ala Pro Val Ala  
 245 250 255  
 Ala Ala Thr Gly Ser Phe Leu Ala Arg Leu Asn Gly Ser Ser Pro Met  
 260 265 270  
 Pro Gly Ala Pro Pro Arg Gln Pro Phe Asn Asp Pro Phe Phe Val Val  
 275 280 285  
 Glu Thr Leu Cys Ile Cys Trp Phe Ser Phe Glu Leu Leu Val His Leu  
 290 295 300  
 Val Ala Cys Pro Ser Lys Ala Val Phe Phe Lys Asn Val Met Asn Leu  
 305 310 315 320  
 Ile Asp Phe Val Ala Ile Leu Pro Tyr Phe Val Ala Leu Gly Thr Glu  
 325 330 335  
 Leu Ala Arg Gln Arg Gly Val Gly Gln Pro Ala Met Ser Leu Ala Ile  
 340 345 350  
 Leu Arg Val Ile Arg Leu Val Arg Val Phe Arg Ile Phe Lys Leu Ser  
 355 360 365  
 Arg His Ser Lys Gly Leu Gln Ile Leu Gly Gln Thr Leu Arg Ala Ser  
 370 375 380  
 Met Arg Glu Leu Gly Leu Leu Ile Phe Phe Leu Phe Ile Gly Val Val  
 385 390 395 400  
 Leu Phe Ser Ser Ala Val Tyr Phe Ala Glu Val Asp Arg Val Asp Thr  
 405 410 415  
 His Phe Thr Ser Ile Pro Glu Ser Phe Trp Trp Ala Val Val Thr Met  
 420 425 430  
 Thr Thr Val Gly Tyr Gly Asp Met Ala Pro Val Thr Val Gly Gly Lys  
 435 440 445  
 Ile Val Gly Ser Leu Cys Ala Ile Ala Gly Val Leu Thr Ile Ser Leu  
 450 455 460  
 Pro Val Pro Val Ile Val Ser Asn Phe Ser Tyr Phe Tyr His Arg Glu  
 465 470 475 480  
 Thr Glu Gly Glu Glu Ala Gly Met Tyr Ser His Val Asp Thr Gln Pro  
 485 490 495  
 Cys Gly Thr Leu Glu Gly Lys Ala Asn Gly Gly Leu Val Asp Ser Glu  
 500 505 510  
 Val Pro Glu Leu Leu Pro Pro Leu Trp Pro Pro Ala Gly Lys His Met  
 515 520 525  
 Val Thr Glu Val  
 530